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BRISTOL BAY DATA REPORT NO. 19

Subsistence Fishing in Bristol Bay, 1963-1969

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ABSTRACT

Salmon subsistence catches for personal use and dog food consumption has been recorded since 1963 in Bristol Bay. This subsistence fishery is primarily centered around the Naknek-Kvichak and Nushagak drainages where local inhabitants, especially outlying villages, are still dependent on salmon for winter dog food as well as to augment their own diets. Subsistence catches in the major two drainages approach 100 to 170,000 salmon on an annual basis. On a drainage-wide basis the total harvest is well below available existing stocks, but over-exploitation of several races of salmon has been observed and is of concern to the management biologist.

INTRODUCTION AND BACKGROUND

Subsistence fishing with gill nets in Bristol Bay has been carried out for many years. Since 1963 the Alaska Department of Fish and Game has monitored and maintained records on the subsistence or personal use harvest in the major river systems.

The manipulation of the commercial salmon harvest by open and closed fishing periods allows a portion of the run to enter the river and lake systems as spawning escapement. Some of this escapement is utilized for subsistence purposes, both as food for human consumption and as dog food. The actual escapement then is the number of fish left after removal of the subsistence requirements.

During some years in certain systems the subsistence requirements may exceed the total spawning population. Therefore, the subsistence requirements must be known and considered in management of the commercial salmon fishery.

Undoubtedly present-day subsistence requirements are much less than in the past when a greater dependence upon natural resources existed for everyday living. There are, however, areas in Bristol Bay where subsistence fish utilization is still important to the local inhabitants. The prime areas where significant subsistence effort is still conducted are the Lake Iliamna-Lake Clark drainage and the Naknek River system in the Naknek-Kvichak district and the Nushagak and Togiak district drainages.

Subsistence harvest data has been collected by the Department since 1963 through the use of a subsistence fishing permit system and village surveys by Department personnel. As additional data is gathered and analyzed it will be possible to estimate subsistence requirements for each village and area, which will, in turn, allow the management biologist to allow additional salmon escapement past the fishery to meet subsistence needs.

The following report is a compilation of subsistence catches in the major districts of Bristol Bay from 1963 through 1969.

SUBSISTENCE REGULATIONS

From statehood through 1964, subsistence regulations in Bristol Bay were essentially similar with the major considerations existing as follows: (1) a permit was required only in the Naknek River and that area less than 12 miles from waters open to commercial fishing in all districts except Togiak where no permit was required; (2) legal gear was limited to 50 fathoms of set gill net and; (3) salmon for subsistence purposes were not to be taken within a commercial fishing district during closed fishing periods.

In 1965 a major revision of the regulations governing subsistence fishing was promulgated. The major revisions were: (1) a permit was required in all areas of Bristol Bay; (2) set gill nets were restricted from fishing within 300 feet of a stream mouth utilized by salmon and; (3) a minimum distance of 300 feet between nets was established.

Further modification of the subsistence regulations were promulgated in 1967 when a portion of the Naknek River was closed to subsistence fishing and in 1968 when subsistence fishing in the Naknek River was limited to

one day per week with 10 fathoms of set gill net. Also effective in 1968 was the closure of the Egegik and Ugashik Rivers to subsistence fishing during the emergency order period.

METHODS OF DATA ANALYSIS

Although subsistence or personal use regulations were in affect for Bristol Bay since statehood, 1963 marked the first effort to collect catch data from those persons engaged in this fishery.

Methods of data collection and analysis differed by area. In the remote Iliamna-Lake Clark drainage, village surveys were conducted to estimate total subsistence harvest. On the Naknek River and Nushagak drainage, main reliance was placed on returns of subsistence permits. In the Nushagak drainage, and all of Bristol Bay for that matter, subsistence fishermen were not aware that a permit was required. It, therefore, became necessary for the Department to estimate the total family units or persons that would participate in the fishery in areas where village surveys were not conducted. These estimates were derived from various sources and in the opinion of the authors are reasonable (Table 5).

As the permit program became known to more subsistence fishermen the number of persons acquiring permits increased (Tables 2 and 6).

For those fishermen who do not return subsistence catch reports it was necessary to estimate the total subsistence catch by all permit holders by use of the following formula:

$$\frac{a}{b} = \frac{c}{x}$$

Where: a = No. of subsistence permit returned
b = Catch as reported on returned permits
c = No. of subsistence permit not returned
x = Catch for permits not returned

This method of data analysis was used only on the Nushagak drainage where an absence of adequate village surveys precluded their use in estimating total subsistence harvest.

Thus, we have four different sets of subsistence catch data: (1) total catches estimated from village surveys; (2) catches from returned permits; (3) estimated total catch from all permit holders; and (4) estimated total subsistence catch based on number of family units.

In several special cases we have estimated the subsistence catch by averaging catches from years when data was available.

The majority of the subsistence fishing effort takes place in the Naknek-Kvichak, Nushagak and Togiak districts. A summary by district follows along with a set of appendix tables presenting the basic catch data.

NAKNEK-KVICHAK DISTRICT SUBSISTENCE FISHERY

by
Kenneth R. Middleton
Glen R. Van Valin
Thomas R. Schroeder

INTRODUCTION

Subsistence fishing has been recorded in the Naknek and Kvichak systems of Bristol Bay since 1963 in an effort to determine the total utilization of salmon in the Naknek-Kvichak district (Table 1). Data has been collected through the use of subsistence fishing permits and village surveys. Permits have been issued primarily to subsistence fishermen in Naknek while surveys have been made in the six villages of the Kvichak system. A greater percentage of fish taken for personal

use in the district is taken in the Kvichak system where the inhabitants are dependent on salmon for winter dog food as well as to augment their own diets. The residents of Naknek, in the Naknek section are almost entirely dependent on a cash income from commercial fishing and purchase much of their winter food and supplies from the cannery. Estimates of the subsistence harvest for the Naknek-Kvichak district based on seven years of data suggests a total requirement of about 60 to 90,000 salmon, most of which will be red salmon (Table 1).

Naknek Section

Subsistence data for the Naknek section was obtained exclusively through the use of permits. Since 1963 was the first year that the permit system was used, it is believed that the number of permits issued was not a true indication of the actual number of subsistence fishermen. Therefore, an average of the permits issued between 1964-69 was used to further expand the 1963 subsistence catch (Table 2).

In 1968, subsistence fishing in the Naknek River was limited to one 24-hour period per week for the period June 26 through July 15. The reduction in fishing time was necessary to contact illegal fishing activities. The total Naknek section subsistence catch for all species was thus substantially reduced over previous years (Table 2).

The reduction in fishing time, first implemented in 1968, was again enforced in 1969 and continued to depress the over-all subsistence harvest (Table 2). In 1969 a record return of 88%, 65 of 74 issued permits, was obtained. Of the returned permits, 38% were not used, which resulted in the lowest estimated subsistence catch in the Naknek section since catches were first recorded in 1963. Many of the people feel it is not

worth the time and effort to fish for one day a week and thus have been acquiring their subsistence fish during the open commercial season.

Kvichak Section

Village surveys were conducted in the Kvichak section in 6 of the 7 years covered by this report, by either Department personnel or staff members of the Fisheries Research Institute of the University of Washington. Village surveys for individual years are reported in the following portion of this report for those years where the data is still available (1963, 1964 and 1969).

The escapement to the Kvichak in 1963 was unusually low (339,000); consequently, the subsistence catch was low and does not represent a true picture of a normal subsistence catch for this area (Table 1). In 1965 no village surveys were conducted, hence all available data for all years when surveys were conducted was used to produce the best estimate of the subsistence harvest for that year.

The estimated red salmon subsistence catch by village area is shown on Table 3. The people of Nondalton continue to harvest the largest number of salmon for subsistence purposes in the entire drainage, accounting for over 35,000 of the annual average catch, 69,500 red salmon (Table 3).

1963

In late August a village survey of the Lake Iliamna-Lake Clark drainage was conducted by Department personnel to assess the subsistence utilization of salmon.

An attempt was made to enumerate all salmon through the use of smokehouse capacity, which was determined to be the limiting factor on the number of salmon caught. Many people quit fishing while salmon were still available, and it was discovered that other freshwater species caught through the ice in winter provided for considerable personal use and dog food requirements. During the Iliamna freshwater commercial fisheries investigations conducted in 1964, it was found that a large number of freshwater fish were utilized locally for subsistence purposes. It was determined that fish taken for personal needs constituted approximately 40 percent of the total commercial catch during the winter-spring fishery of 1964 (Metskev, 1967).

It was found that utilization of other species of fish for dog food varied considerably with location of the village. A total of six village and fish camps were visited. Several interviews were conducted in each village and actual counts were made in smokehouses whenever possible. It was discovered that very little fish were salted for personal use due to the high cost of salt, rather it was common practice to smoke fish for eating purposes.

Outlined below is a summary of the five major areas of subsistence fishing in the Lake Iliamna-Lake Clark drainage, plus an estimate for the Kvichak River village of Levelock, based on personal interviews with two residents of that village:

Village	No. Families	No. Dogs	Smokehouses		Subsistence Catch		
			No.	Capacity	Smoked	Salted	Total
Nondalton	34	200-300	20	50,000	6,000	1,400	7,400
Newhalen-Iliamna	40-50 people	80	9	25,000	-	-	8,500
Kokhonak	7-8	70	5	-	5,000	-	5,000
Pedro Bay	10	73	10	-	-	-	4,000
Iguigig	4	15	2	-	-	-	1,200
Levelock	9	15	2	-	-	-	600
						Total	26,700

The actual subsistence catch in this system for 1963 was estimated to be between 28,000 and 35,000 salmon or close to 10% of the total escapement (Table 3). Based on smokehouse capacity, the potential subsistence harvest would be approximately 120,000 fish.

A similar survey at a later date by personnel of the Fisheries Research Institute produced an estimate of 56,000 salmon taken for personal use in 1963, or 17% of the total escapement (Kerns and Phinney, 1964). F.R.I. personnel farther reported the results of a similar survey in 1955 which resulted in an estimated personal use catch of 81,500 salmon, or 33% of the total escapement that year.

1964

Department personnel conducted a village survey on August 24-25, which covered three villages in the Iliamna-Lake Clark area. Subsistence fishing was still being carried on in most villages and the harvest data did not represent the total eventual catch. For those areas not surveyed, the subsistence catch has been interpolated using all other years when data was available (Table 3).

A summary of the village surveys conducted in 1964 is shown below:

Village	No. Families	No. Dogs	No. Smokehouses	Subsistence Catch
Nondalton	34	250+	26	9,200
Newhalen-Iliamna	12	-	9	7,100
Pedro Bay	10	-	-	8,300
			Total	24,600

Personnel of the Fisheries Research Institute also conducted a village survey and an estimate of 81,500 red salmon was reported caught for personal

use (Phinney, 1965). F.R.I. further reported that there were 59 families fishing in 1964 and their total estimated personal use requirements were about 114,000 salmon.

1969

Door to door village surveys have been the main source of subsistence catch data since 1963. In 1969 a concerted effort was made to try and establish a permit system in the villages. Meetings were held in all villages, except Igiugig and Levelock, to explain the subsistence permit program. The meetings were generally well attended and interest was expressed by many of the people.

Accurate estimates of the number of family units that take subsistence fish, and the number of dogs for each village were acquired for the first time since 1963. If the permit system is fairly successful, the family units can be used to more accurately estimate the total subsistence catch for the villages.

A new term, "nudilvie", which is the Native word for a spawned-out salmon, was used during the village surveys, and a total number of "nudilvie" was recorded for each village. "Nudilvie" are entirely for personal use; whereas, the fresh salmon are used mainly for dog food. An average of 150 "nudilvie" were taken for each family unit in each village. Summarized on the following page are the data gathered on the village surveys:

Village	No. of Dogs	No. Family Units	Subsistence Catch Nudilvie	Fresh	Total
Nondalton	257	33	4,900	39,100	44,000
Newhalen-Iliamna	51	11	1,500	3,400	4,900
Kokhonak	127	11	3,600	11,400	15,000
Pedro Bay	19	10	1,100	3,100	4,200
Igiugig	39	5	-	5,100	5,100
Totals			11,100	62,100	73,200

EGEGIK AND UGASHIK DISTRICTS SUBSISTENCE FISHERY

by Thomas R. Schroeder

Very little subsistence effort takes place in the Egegik and Ugashik districts. Most of the subsistence catch in these two drainages is utilized for personal use as dog teams are not prevalent on the Peninsula.

Since 1963, 20 permits have been issued in the Egegik district. Of these, only 7 were returned and only 1 yielded catch information (298 red salmon and 3 king salmon).

Thirty permits have been issued in the Ugashik district since 1963; none were issued in 1965. Of these, 24 or 80% were returned, indicating an average subsistence harvest of less than 1,000 salmon per year (Table 4).

Subsistence catches in the Ugashik district consist primarily of red and coho salmon. Pink, chum and king salmon spawn primarily in the King Salmon River drainage and are thus automatically eliminated from most catches due to the location of most of the subsistence nets on the Ugashik River above the mouth of the King Salmon River.

NUSHAGAK AND TOGIAK DISTRICTS SUBSISTENCE FISHERY

by Michael L. Nelson
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Introduction

Subsistence or personal use fishing in the Nushagak and Togiak districts is still carried on by most of the local inhabitants, especially in the upriver villages along the Nushagak River.

Although a major share of the population of this area is on a cash economy basis, especially the Dillingham area, most families still salt and smoke fish for personal use.

Subsistence utilization of salmon has been recorded in the Nushagak district since 1963, while 1965 marks the first year subsistence catch data was obtained from the Togiak area.

Nushagak District

Subsistence catch data is obtained by the permit system, with village surveys filling in additional information. Most permits are issued out of the Department's office in Dillingham, however, in most of the outlying areas the village postmasters have volunteered their services and have issued permits.

Permits issued by the postmasters in each village as well as the Dillingham office, are grouped into six sub-areas for data analysis: (1) Nushagak Bay which includes fish taken at Dillingham, Kanakanak and Olsenville beaches, Clark's Point, Nushagak slough, Ekuk, Igushik beach and the Lewis Point fish camps, (2) Wood River Lakes which includes fish

taken at Aleknagik, (3) Manokotak and Igushik Lakes, (4) Ekwok, (5) New Stuyahok, and (6) Koliganek.

Estimates of the subsistence harvest for the Nushagak district based on seven years of data suggests a total requirement of about 40 to 80,000 salmon, of which more than 60% will be red salmon.

A summary of the Nushagak district subsistence catches and effort is shown in Tables 1, 5 and 6.

1963

Subsistence permits were distributed on a trial basis in the Nushagak Bay area and of 71 permits issued 53 or 75% were returned with catch data (Table 6). The estimated total catch among all permit holders is shown in Table 6.

In an effort to estimate the total salmon take among all subsistence fishermen in the district, the number of family fishing units for each area was estimated (Table 5).

Subsistence catches were then interpolated for all sub-areas in 1963 using average catches and returns from permits returned during 1964-65 and number of family units. The catch records returned indicated a total probable subsistence harvest for the Nushagak district of approximately 57,200 salmon (Table 1).

1964

Subsistence fishing permits were again distributed on a trial basis in the Nushagak district and of 74 permits issued 49 or 66% were returned. In addition, the village of Manokotak turned in a total of 19 subsistence permits on a voluntary basis from an estimated 30 family

units fishing. The estimated total catch among all permit holders is shown on Table 6.

The estimated number of family units fishing in each area was estimated from information supplied by local bush pilots, Department subsistence surveys and the Bureau of Indian Affairs (Table 5).

The total estimated subsistence catch for Nushagak Bay, Wood River Lakes and Manokotak was estimated from the 1964 returned permits. The subsistence catch for New Stuyahok, Koliganek and Ekwok was based on returned permits from all years. Total subsistence salmon catch for 1964 was estimated to be 52,400 (Table 1).

Village surveys were conducted by Department personnel in 1964 and the following is a summary of those surveys:

Village	Family Units	No. Dogs	Estimated Sub. Needs	Remarks
Manokotak	35	30	6,000	Freshwater species taken: Char, whitefish and pike
Lewis Point	33	-	64,000	People from Ekwok, Stuyahok & Koliganek
Ekwok	14	131	14,000	1,100 cohos taken
New Stuyahok	27	-	62,000	Most fish caught at Lewis Pt.
Koliganek	16	176	-	-

1965

Under the new subsistence regulations in 1965 all subsistence fishermen in Bristol Bay were required to obtain a permit and report the catch at the end of the fishing season. Enforcement of the regulation was not asked and the permits were again returned on a voluntary basis. A total of 121 permits were issued in the Nushagak district with 88 or 73% returned.

The estimated total catch among all permit holders in the Nushagak district is shown on Table 6.

Partial returns from the up-river villages of Ekwok, New Stuyahok and Koliganek were used to estimate the total subsistence catch from the Nushagak-Mulchatna River area. The village of Manokotak on the Igushik River did not return subsistence catch permits and consequently the data in 1964 and 1966 was used to estimate the catch, as this village takes a relatively consistent number of fish each year.

The number of family units fishing in each area was again estimated from information supplied from local bush pilots, village populations estimated by Western Alaska Airlines and Department subsistence surveys (Table 5). Total estimated subsistence catch for the Nushagak district in 1965 was 76,100 fish (Table 1).

1966

A total of 110 subsistence permits were issued in the Nushagak district during 1966 with 100 or 91% of the permits being returned on a voluntary basis.

The VISTA Volunteer Worker stationed at Manokotak issued and returned to the Department 24 subsistence permits. It was further substantiated by the village chief that Manokotak residents take between 150 and 200 red salmon per family each year for personal use. This take conforms with the Department estimates of total subsistence harvest.

The estimated total catch among all permit holders in the Nushagak district is shown on Table 6.

The number of family fishing units for each area was estimated from past returns and from Bureau of Indian Affairs' field data on individual villages and is shown on Table 5.

The total estimated subsistence catch for the Nushagak area in 1966 based on catches from returned permits and number of family fishing units was 40,600 fish (Table 1).

1967

A total of 128 subsistence permits were issued in the Nushagak district during 1967 with 89 or 70% of the permits returned on a voluntary basis.

In all villages of the Nushagak district the postmaster distributed the subsistence permits to the people. The bulk of the permits were again issued out of the local Fish and Game office in Dillingham.

The estimated total catch among all permit holders in the Nushagak district is shown on Table 6.

The number of family fishing units for each area was estimated from past returns. The majority of subsistence fishermen from the villages of New Stuyahok and Koliganek move their fishing camps down to Nushagak Bay during the fishing season and hence their catches are reported in the Nushagak Bay area. Estimated family fishing units are shown on Table 5.

The total estimated subsistence catch for the Nushagak district in 1967 based on catches from returned permits and number of family fishing units was 57,400 fish (Table 1).

1968

In 1968, 115 subsistence permits were issued in the Nushagak district while 72% or 83 permits were returned. This was 13 permits less than in 1967.

The total estimated catches for all permits returned are shown in Table 6.

The family unit estimate (Table 5) is made to encompass also, the catch of those persons who did not obtain subsistence permits. This count, which was estimated to be the same number as for 1967, has been obtained from aerial surveys and personal communications.

The total estimated subsistence catch for the Nushagak district by species for all family units in 1968 was 52,900 fish (Table 1).

1969

A total of 145 subsistence permits were issued in the Nushagak district in 1969 with 116 or 80% of the permits being returned. This was a record high number of permits and a 20% increase over 1968.

The total estimated catch by species for each area for all permits returned is shown on Table 6.

Permits were distributed to the fishermen in remote villages by the local postmasters, while the Department office in Dillingham continued to issue the bulk of subsistence permits.

The greatest increase in numbers of permits issued occurred in the Nushagak Bay area. This is attributed to the overall acceptance of the program by the people and the presence of a resident Protection officer. Another factor affecting the fluctuation of subsistence fishermen in Nushagak Bay is the annual turnover of teachers and hospital personnel in the Dillingham-Kanakanak area.

Due to this large increase of permits in the Nushagak Bay area, the family unit estimate was increased from 90 to 120, while family units for all other villages remained the same (Table 5).

No permits were issued in the New Stuyahok or Koliganek areas as most of these people subsistence fish in Nushagak Bay during the summer. Past

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1969

A total of 162 subsistence permits were issued in the Nushagak district in 1969 with 133 or 82% of the permits being returned. This was a record high number of permits and a 41% increase over 1968.

The total estimated catch by species for each area for all permits returned is shown on Table 6.

Permits were distributed to the fishermen in remote villages by the local postmasters, while the Department office in Dillingham continued to issue the bulk of subsistence permits.

The greatest increase in numbers of permits issued occurred in the Nushagak Bay area. This is attributed to the overall acceptance of the program by the people and the presence of a resident Protection officer. Another factor affecting the fluctuation of subsistence fishermen in Nushagak Bay is the annual turnover of teachers and hospital personnel in the Dillingham-Kanakanak area.

Due to this large increase of permits in the Nushagak Bay area, the family unit estimate was increased from 90 to 130. Family units for the village of New Stuyahok was increased from 2 to 5 due to the return of 5 permits from the village. All other villages remained the same.

No permits were issued at the village of Koliganek as most of the people subsistence fish in Nushagak Bay during the summer. Past data (Table 6) indicates an average yearly subsistence catch of approximately 5,300 salmon, with the majority of these being red salmon.

The total estimated subsistence salmon catch for the Nushagak district by species for all family units in 1969 was 50,200 (Table 1).

data (Table 6) indicate an average yearly subsistence catch of approximately 6,500 salmon, with the majority of these being red salmon.

The total estimated subsistence salmon catch for the Nushagak district by species for all family units in 1969 was 44,100 (Table 1).

Freshwater Subsistence Fishery

Three freshwater subsistence permits were issued and returned for the Tikchik Lake area. Only one permit was used and reported a catch of 100 whitefish, 200 lake trout, 5 northern pike and 10 burbot.

TOGIAK DISTRICT SUBSISTENCE FISHERY

by Michael L. Nelson

Local inhabitants from the villages of Togiak and Twin Hills in Togiak Bay account for the subsistence harvest in this area.

Due to the remoteness of Togiak drainage all efforts to obtain subsistence catches have been made through the village postmasters. Participation in the permit system has been poor, due primarily to a lack of understanding of subsistence regulations.

In 1965, the Department received 14 out of 36 permits issued in the Togiak area. The estimated total catch among all permit holders in the Togiak district was 8,600 salmon. Insufficient data exists to estimate the number of family units participating in the fishery, but it is probable that the yearly subsistence take falls in the range of 10-20,000 salmon.

In 1969 only two permits were returned with reported catches of 133 reds, 19 kings, 60 chums, 17 pinks, 8 cohos for a total of 237 salmon.

An extensive and thorough subsistence survey is tentatively planned for the fall of 1970. A house to house survey will be conducted and the subsistence reporting requirements will be explained to all fishermen. In addition to tabulating the subsistence harvest the surveys will determine the number of dogs and snowmachines present and the number of family units.

DISCUSSION

The monitoring program directed toward the Bristol Bay salmon subsistence fishery by the Department, has only in recent years, begun to adequately reflect subsistence harvest levels. In many drainages, little or no surveillance of the personal use fishery has been attempted. Further, the winter subsistence fishery on freshwater species, such as pike, whitefish and char, has not been monitored or investigated.

The Department's aim is to try to increase efforts in the monitoring program to shed light on subsistence harvest levels in areas not now being covered and on winter fishing efforts.

New and better catch reporting techniques, including snap-out subsistence permits, better and more consistent and timely village surveys and a general upgrading of effort on the whole program is being planned for the future. With an adequate monitoring program it should be possible to prevent destruction of races of fish, as has been the case on several creek spawning red salmon stocks on Aleknagik Lake of the Wood River system.

ACKNOWLEDGMENTS

Many persons collected the data and information that went into this report. Mr. Kenneth R. Middleton and Mr. Angus D. Robertson are primarily responsible for the early years (1963-66) on the Naknek-Kvichak district, while most of the data since that time were collected by those persons listed under each section heading in the report.

The writer (editor) is responsible for the general format of the report and all sections without a listed author. The writer is indebted to those persons listed in the report for their contribution.

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APPENDIX TABLES

TABLE 1. Summary of comparative subsistence catch of salmon for Bristol Bay by district and species, 1963-69.[1/]

Year	Catch by Species					
	Reds	Kings	Chums	Pinks	Cohos	Total
			NAKNEK-KVICHAK DISTRICT			
1963	61,700	500	100	+	400	62,700
1964	85,900	500	+	1,100	800	88,300
1965	71,900	500	100	+	300	72,800
1966	74,500	600	300	2,700	400	78,500
1967	68,500	500	100	+	500	69,600
1968	71,000	500	100	300	200	72,100
1969	76,300	400	100	+	400	77,200
Totals	509,800	3,500	800	4,100	3,000	521,200
7-Year Average	72,800	500	100	1,400[2/]	400	75,200
			NUSHAGAK DISTRICT			
1963	41,200	3,600	8,500	+	3,900	57,200
1964	31,800	2,900	8,700	4,100	4,900	52,400
1965	47,500	4,600	18,400	200	5,400	76,100
1966	23,600	3,700	6,000	4,900	2,400	40,600
1967	34,900	3,700	14,000	800	4,000	57,400
1968	30,000	6,600	8,600	5,800	1,900	52,900
1969	27,700	7,100	8,200	100	7,100	50,200
Totals	236,700	32,200	72,400	15,900	29,600	386,800
7-Year Average	33,800	4,600	10,300	5,300[2/]	4,200	55,300

1/ Subsistence fishing is insignificant in the Egegik and Ugashik districts of Bristol Bay, while preliminary data indicates that the Togiak district catches fall in the range of 10-20,000 salmon; catches rounded to nearest 100.

2/ Even (3-year) average.

TABLE 2. Summary of estimated subsistence catch of salmon by species in the Naknek section of the Naknek-Kvichak district, 1963-69.[1/]

Year	Number of Permits			Subsistence Catch by Species					
	Issued	Returned	%	Reds	Kings	Chums	Pinks	Cohos	Total
1963[2/]	50	33	66	3,900	500	100	+	400	4,900
1964	71	61	86	3,400	500	+	1,100	800	5,800
1965	64	32	50	2,400	500	100	+	300	3,300
1966	76	45	59	3,800	600	300	2,700	400	7,800
1967	68	43	63	4,900	500	100	+	500	6,000
1968	62	54	87	2,400	500	100	300	200	3,500
1969	74	65	88	2,100	400	100	+	400	3,000
Totals	465	333		22,900	3,500	800	4,100	3,000	34,300
7-Year Avg.	66	48	71	3,300	500	100	1,400[3/]	400	5,700

1/ Catches rounded to nearest hundred. See Methods of Data Analysis.
2/ The average number of permits issued between 1964-69 was used to further expand the 1963 estimated subsistence catch.
3/ Even-year (3-year) average.

TABLE 3. Summary of estimated red salmon subsistence catch by village in the Kvichak section of the Naknek-Kvichak district, 1963-69.[1/]

		Red Salmon Subsistence Catch by Village						
Year	Agency	Nondalton	Newhalen/ Iliamna	Kokhonak	Pedro Bay	Igiugig	Levelock	Total
1963	A.D.F.G.	7,400	8,500	6,000	4,400	1,200	600	28,10
	F.R.I.	25,000	10,000	7,000	14,000	-	-	56,00
1964	A.D.F.G.	9,200	7,100	-	8,300	-	1,000[2/]	25,60
	F.R.I.	35,000	19,000	8,500	15,000	4,000	-	81,50
1965[3/]	A.D.F.G.	35,500	9,700	10,200	9,800	3,300	1,000	69,50
1966	A.D.F.G.	45,800	6,600	10,500	6,000	1,200	600	70,70
1967	A.D.F.G.	29,600	9,100	10,200	9,900	3,400	1,400	63,60
1968	A.D.F.G.	33,700	8,700	10,200[4/]	9,800[4/]	4,800	1,400	68,60
1969	A.D.F.G.	44,000	4,900	15,000	4,200	5,100	1,000[2/]	74,20
Totals[5/]		248,600	68,000	71,600	68,700	23,000	7,000	486,90
7-Year Average		35,500	9,700	10,200	9,800	3,300	1,000	69,50

1/ Catches rounded to nearest hundred. See Methods of Data Analysis.
2/ No survey conducted, catch is interpolated using 1963, 1966-1968 average.
3/ No survey conducted, catches are interpolated using all available years when surveys were conducted.
4/ No survey conducted, catch is interpolated using 1963-64, 1966-67 and 1969 average.
5/ In years when both agencies (A.D.F.G. and F.R.I.) made catch estimates, the highest figur was chosen to compile the 7-year averages.

TABLE 4. Summary of estimated subsistence catch of salmon by species in the Ugashik district, 1963-69.[1/]

Year	No. of Permits Issued	Returned	%	Subsistence Catch by Species Reds	Kings	Chums	Pinks	Cohos	Total
1963	8	6	75	300	+	100	+	600	1,000
1964	2	1	50	300	0	0	0	0	300
1965[2/]	-	-	-	-	-	-	-	-	-
1966	4	4	100	1,000	0	0	0	0	1,000
1967	5	4	80	700	+	100	+	500	1,300
1968	8	6	75	300	+	100	+	300	700
1969	3	3	100	100	0	0	0	200	300
Totals	30	24	80	2,700	+	300	+	1,600	4,600
6-Yr. Avg.	5	4	80	500	+	100	+	300	900

1/ Catches rounded to nearest hundred.
2/ No permits issued.

TABLE 5. Summary of estimated family subsistence fishing units by area and year, Nushagak district, 1963-69.

Area	No. Family Fishing Units by Year							Average
	1963	1964	1965	1966	1967	1968	1969	
Nushagak Bay	90	65	95	60	90	90	130	89
Wood River Lakes	15	15	16	15	15	15	15	15
Ekwok	10	10	10	10	10	10	10	10
New Stuyahok	8	8	8	8	2	2	5	6
Koliganek	10	10	10	10	3	3	3	7
Manokotak	30	30	30	24	30	30	30	29
Totals	163	138	169	127	150	150	193	156

TABLE 6. Summary of estimated subsistence catch of salmon by species and area among all permit holders in the Nushagak district, 1963-69.[1/]

Year	No. of Permits Issued	No. of Permits Returned	%	Subsistence Catch by Species: Reds	Kings	Chums	Pinks	Cohos	Total
				NUSHAGAK BAY					
1963	71	53	75	13,600	1,200	1,100	+	1,500	17,400
64	58	37	64	7,200	800	200	1,400	2,600	12,200
65	88	63	72	16,700	1,700	7,400	100	3,200	29,100
66	53	52	98	4,100	1,800	400	2,100	600	9,000
67	84	61	73	14,800	2,400	6,700	600	2,000	26,500
68	86	64	74	11,100	3,900	3,300	3,400	1,100	22,800
69	122	97	80	11,400	3,800	3,700	100	4,200	23,200
Totals	562	427	-	78,900	15,600	22,800	7,700	15,200	140,200
7-Yr. Avg.	80	61	77	11,300	2,200	3,300	1,100	2,200	20,000
				WOOD RIVER					
1964	16	11	69	4,100	+	+	200	200	4,500
65	16	13	81	5,800	100	+	+	100	6,000
66	9	8	89	3,000	0	100	+	+	3,100
67	4	1	25	1,000	0	0	0	0	1,000
68	5	2	40	1,200	0	0	+	0	1,200
69	2	1	50	800	+	+	+	100	900
Totals	52	36	-	15,900	100	100	200	400	16,700
6-Yr. Avg.	9	6	67	2,700	+	+	+	+	2,800
				EKWOK					
1965	8	7	87	3,300	400	1,500	+	500	5,700
66	10	9	90	2,300	500	2,200	1,200	200	6,400
67	8	5	63	3,600	500	5,000	+	100	9,200
68	9	8	89	6,400	800	2,500	500	+	10,200
69	9	6	67	5,400	1,800	2,800	0	600	10,600
Totals	44	35	-	21,000	4,000	14,000	1,700	1,400	42,100
5-Yr. Avg.	9	7	78	4,200	800	2,800	900[2/]	300	8,400

(Continued)

TABLE 6. (Continued)

Year	No. of Permits Issued	No. of Permits Returned	%	Subsistence Catch by Species: Reds	Kings	Chums	Pinks	Cohos	Total
				NEW STUYAHOK					
1965	3	1	33	1,300	+	300	0	0	1,600
66	6	1	17	400	200	100	200	0	900
67	1	1	100	1,000	+	0	0	0	1,000
68	2	2	100	500	200	100	200	0	1,100
69	5	5	100	300	200	200	+	100	800
Totals	17	10	-	3,500	600	700	400	100	5,300
5-Yr. Avg.	3	2	70	700	100	100	200[2/]	+	1,100
				KOLIGANEK					
1965	6	3	50	4,800	1,300	4,600	0	100	10,800
66	8	6	75	4,300	500	2,300	700	400	8,200
67	1	1	100	300	100	300	+	0	700
68	1	1	100	600	100	300	400	+	1,400
69	0	0	0	0	0	0	0	0	0
Totals	16	11	69	10,000	2,000	7,500	1,100	500	21,100
5-Yr. Avg.	4	3	75	2,500	500	1,900	600[2/]	100	5,300
				MANOKOTAK					
1964	19	19	100	5,300	100	+	100	600	6,100
66	24	24	100	5,700	200	100	100	1,000	7,100
67	30	21	70	9,100	100	+	100	1,600	10,900
68	12	7	58	3,200	100	+	0	400	3,700
69	24	24	100	5,100	100	100	+	900	6,200
Totals	109	95	-	28,400	600	200	300	4,500	34,000
5-Yr. Avg.	22	19	86	5,700	100	+	100	900	6,800

(Continued)

TABLE 6. (Continued)

Year	No. of Permits Issued	No. of Permits Returned	%	Subsistence Catch by Species: Reds	Kings	Chums	Pinks	Cohos	Total
				NUSHAGAK DISTRICT					
1963	71	53	75	13,600	1,200	1,100	+	1,500	17,400
64	74	49	66	16,800	900	200	1,600	3,400	22,900
65	121	88	73	32,200	3,400	14,000	200	4,100	53,900
66	110	100	91	19,900	3,300	5,300	4,300	2,200	35,000
67	128	89	70	29,800	3,100	12,000	700	3,700	49,300
68	115	83	72	23,000	5,000	6,200	4,500	1,400	40,100
69	162	133	82	23,000	5,900	6,800	100	5,900	41,700
Totals	781	595	-	158,300	22,800	45,600	11,400	22,200	260,300
7-Yr. Avg.	112	85	76	22,600	3,300	6,500	1,600	3,200	37,200

1/ Catches rounded to nearest hundred. See Methods of Data Analysis.
2/ 2-year average.